

## PATENT

### In the Claims:

The current status of all claims is listed below and supercedes all previous lists of claims.

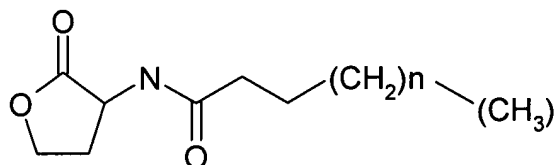
Please cancel claims 14-16, 30, and 31 without prejudice to their presentation in another application, and amend claims 1-3, 6, 7, 10, 11, 13, 17, 19-21, 24, 25, 28, 29, and 32 as follows:

1. (currently amended) A method for the treatment of a bacterial infection of a subject, ~~the~~  
method comprising administration of comprising:

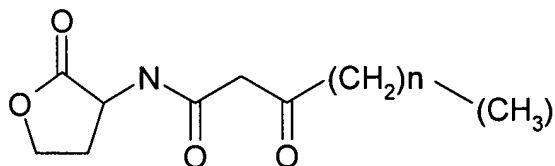
administering a monoclonal antibody to a molecule selected from the group consisting of

a of:

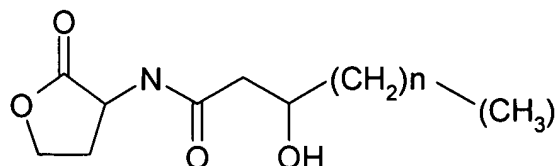
a) a homoserine lactone molecule of general formula formulae I, II, or III:



### Formula I



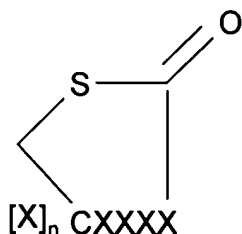
Formula II



### Formula III

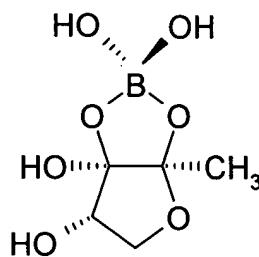
where  $n = 0$  to 12;

b) a peptide thiolactone of general formula (IV):

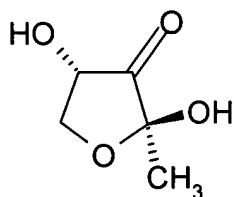


where X is any amino acid and  $n = 1$  to 10;

or c) Auto Inducer-2 (AI-2),



or d) Pro-AI-2 or a  $C_1$ - $C_{10}$  saturated or unsaturated carboxylic acid derivative thereof



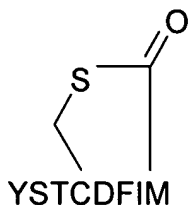
wherein said antibody specifically binds to the free soluble form of the homoserine lactone, peptide thiolactone, AI-2 or Pro-AI-2 or a  $C_1$ - $C_{10}$  saturated or unsaturated carboxylic acid derivative thereof in the presence of conjugated derivatives thereof.

2. (currently amended) A method as claimed in claim 1, in which the homoserine lactone molecule of general formula I is *N*-butanoly-L-homoserine lactone (BHL) where  $n = 0$ , *N*-dodecanoyl-L-homoserine lactone (dDHL) where  $n = 8$ , or ~~and~~ *n*-tetradecanoyl-L-homoserine lactone (tDHL) where  $n = 10$ .

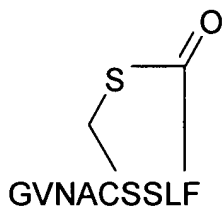
3. (currently amended) A method as claimed in claim 1, in which the homoserine lactone molecule of general formula II is *N*-(-3-oxohexanoyl)-L-homoserine lactone (OHHL) where  $n = 2$  ~~and~~ or *N*-(-3-oxododecanoyl)-L-homoserine lactone (OdDHL) where  $n = 8$ .

4. (previously presented) A method as claimed in claim 1, in which the homoserine lactone molecule of general formula III is *N*-(-3-hydroxybutanoyl)-L-homoserine lactone (HBHL) where  $n = 0$ .

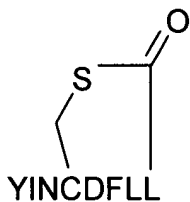
5. (previously presented) A method as claimed in claim 1, in which the peptide thiolactone molecule is:



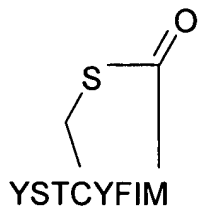
or



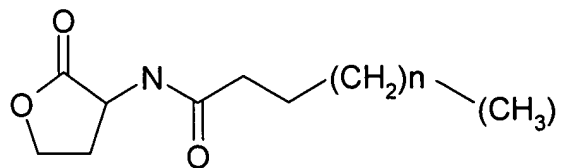
or



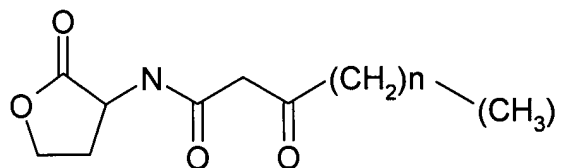
or



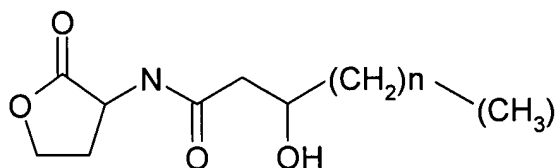
6. (currently amended) A method as claimed in ~~any one of claims~~ claim 1 to 5, in which the monoclonal antibody is a single chain antibody (scAb).
7. (currently amended) A method as claimed in ~~any one of claims~~ claim 1 to 5, in which the monoclonal antibody is an antibody fragment.
8. (previously presented) A method as claimed in claim 7, in which the antibody fragment is a single chain variable fragment (scFv).
9. (previously presented) A method as claimed in claim 7, in which the antibody fragment is a single domain fragment.
10. (currently amended) A method as claimed in claim 1 wherein ~~for the treatment of immuno-suppression caused by said bacterial infection of a subject, the method comprising administration of an antibody as defined in any of claims 1 to 9~~ is treated by said administering.
11. (currently amended) A method of screening a population of monoclonal antibodies for an anti-bacterial monoclonal antibody, ~~the method comprising~~ comprising:  
conjugating a molecule selected from the group consisting of a of:  
a) a homoserine lactone molecule of general ~~formula~~ formulae I, II, or III:



Formula I



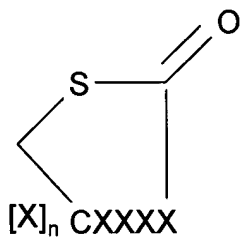
Formula II



Formula III

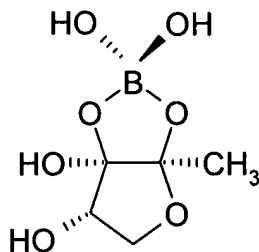
where  $n = 0$  to  $12$ ;

b) a peptide thiolactone of general formula (IV):

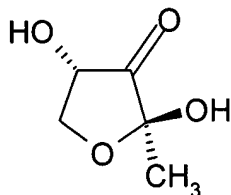


where X is any amino acid and  $n = 1$  to  $10$ ;

or c) Auto Inducer-2 (AI-2),



or d) Pro-AI-2 or a C<sub>1</sub>-C<sub>10</sub> saturated or unsaturated carboxylic acid derivative thereof



to a carrier ~~molecule~~ and molecule; and

using the conjugate so formed to identify a monoclonal antibody that specifically binds to the free soluble form of the homoserine lactone, peptide thiolactone, AI-2 or Pro-AI-2 or a C<sub>1</sub>-C<sub>10</sub> saturated or unsaturated carboxylic acid derivative thereof from the population of monoclonal antibodies in the presence of conjugated derivatives thereof.

12. (previously presented) A method as claimed in claim 11, in which the carrier molecule is a protein.

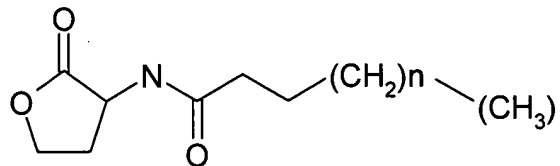
13. (currently amended) A method as claimed in claim 11 ~~or claim 12~~, in which the population of monoclonal antibodies is a phage display library.

14-16. (canceled).

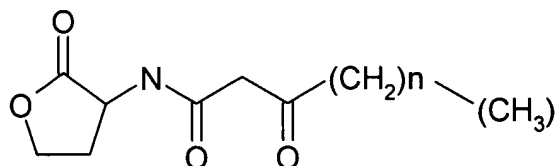
17. (currently amended) A method of treatment of a bacterial infection of a subject, ~~the method comprising isolation of~~ comprising:

isolating a molecule selected from the group consisting of a of:

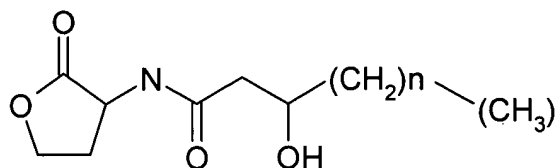
a) a homoserine lactone molecule of general formula formulae I, II, or III:



Formula I



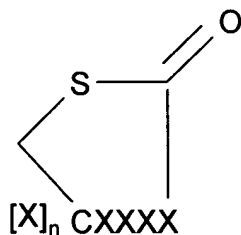
Formula II



Formula III

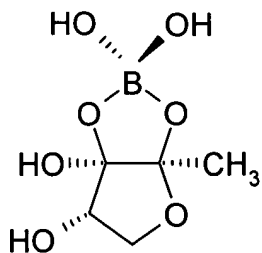
where  $n = 0$  to  $12$ ;

b) a peptide thiolactone of general formula (IV):

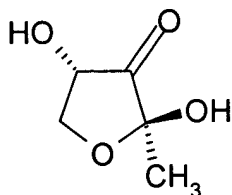


where X is any amino acid and  $n = 1$  to  $10$ ;

or c) Auto Inducer-2 (AI-2),



or d) Pro-AI-2 or a C<sub>1</sub>-C<sub>10</sub> saturated or unsaturated carboxylic acid derivative thereof



in a sample from said subject; ~~and~~

using said molecule to screen a population of monoclonal antibodies for an anti-bacterial monoclonal antibody that specifically binds to the free soluble form of said molecule, in the presence of conjugated derivatives ~~thereof~~ thereof; and

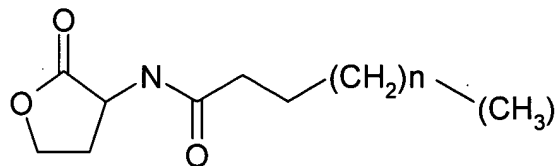
administering said monoclonal antibody so identified to ~~a patient in need thereof~~ said subject.

18. (previously presented) A method as claimed in claim 17, in which the sample is of blood, saliva, tissue, cerebro-spinal fluid, tears, semen, urine, faeces, pus, skin, or mucous secretions.

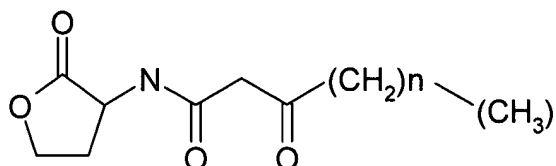
19. (currently amended) A monoclonal antibody to a molecule selected from the group consisting ~~of a~~ of:

a) a homoserine lactone molecule of general ~~formula~~ formulae:

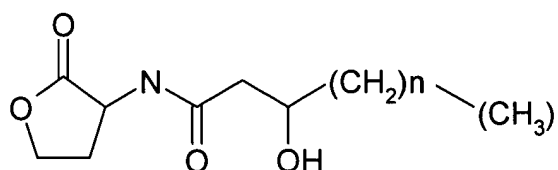




Formula I



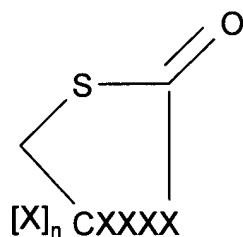
Formula II



Formula III

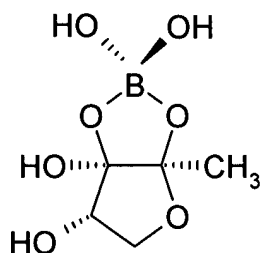
where  $n = 0$  to  $12$ ;

b) a peptide thiolactone of general formula (IV):

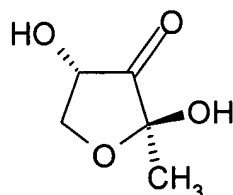


where X is any amino acid and  $n = 1$  to  $10$ ;

c) Auto Inducer-2 (AI-2),



or d) Pro-AI-2 or a C<sub>1</sub>-C<sub>10</sub> saturated or unsaturated carboxylic acid derivative thereof



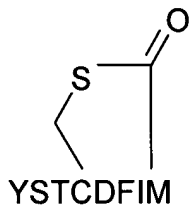
wherein said antibody specifically binds to the free soluble form of the molecule in the presence of conjugated derivatives thereof.

20. (currently amended) A monoclonal antibody as claimed in claim 19, in which the homoserine lactone molecule of general formula I is *N*-butanoly-L-homoserine lactone (BHL) where  $n = 0$ , *N*-dodecanoyl-L-homoserine lactone (dDHL) where  $n = 8$ , or ~~and~~ *n*-tetradecanoyl-L-homoserine lactone (tDHL) where  $n = 10$ .

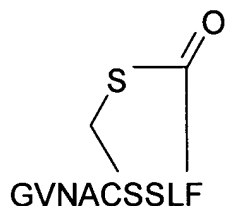
21. (currently amended) A monoclonal antibody as claimed in claim 19, in which the homoserine lactone molecule of general formula II is *N*-(-3-oxohexanoyl)-L-homoserine lactone (OHHL) where  $n = 2$  ~~and~~ or *N*-(-3-oxododecanoyl)-L-homoserine lactone (OdDHL) where  $n = 8$ .

22. (previously presented) A monoclonal antibody as claimed in claim 19, in which the homoserine lactone molecule of general formula III is *N*-(-3-hydroxybutanoyl)-L-homoserine lactone (HBHL) where  $n = 0$ .

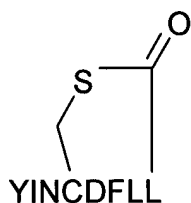
23. (previously presented) A monoclonal antibody as claimed in claim 19, in which the peptide thiolactone molecule is:



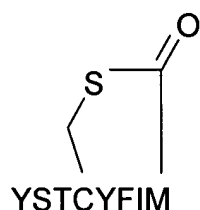
or



or



or



24. (currently amended) A monoclonal antibody as claimed in ~~any one of claims 19 to 23~~ claim 19 which is a single chain antibody (scAb).

25. (currently amended) A monoclonal antibody as claimed in ~~any one of claims 19 to 23~~ claim 19 which is an antibody fragment.

26. (previously presented) A monoclonal antibody as claimed in claim 25, in which the antibody fragment is a single chain variable fragment (scFv).

27. (previously presented) A monoclonal antibody as claimed in claim 25, in which the antibody fragment is a single domain fragment.

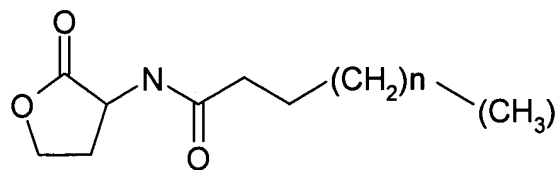
28. (currently amended) A pharmaceutical composition comprising an antibody as defined in ~~any one of claims 19 to 27~~ claim 19.

29. (currently amended) A kit of parts comprising an antibody as defined in ~~any of claims 19 to 27~~ claim 19 provided in unit dosage form and instructions for use ~~in a method of any one of claims 1 to 10~~ thereof.

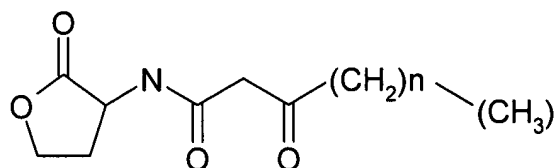
30-31. (canceled).

32. (currently amended) A monoclonal antibody to a molecule selected from the group consisting of a of:

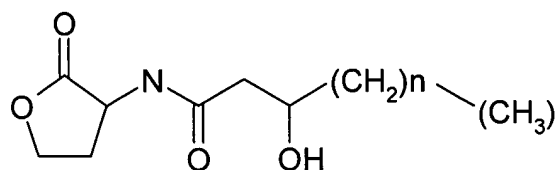
a) a homoserine lactone molecule of general ~~formula~~ formulae I, II, or III:



Formula I



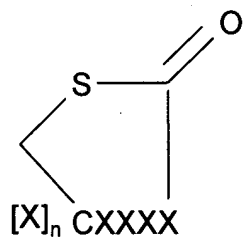
Formula II



Formula III

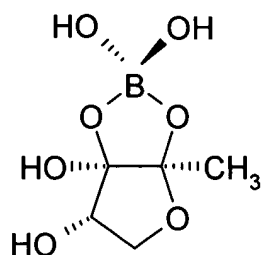
where  $n = 0$  to  $12$ ;

b) a peptide thiolactone of general formula (IV):

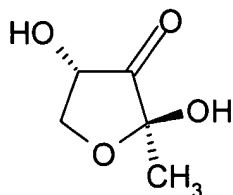


where  $X$  is any amino acid and  $n = 1$  to  $10$ ;

c) Auto Inducer-2 (AI-2),



or d) Pro-AI-2 or a C<sub>1</sub>-C<sub>10</sub> saturated or unsaturated carboxylic acid derivative thereof



wherein said antibody specifically binds to the free soluble form of the molecule in the presence of conjugated derivatives thereof, in which said antibody is ~~obtainable~~ obtained by a method comprising ~~the steps of~~:

(1)——screening a phage display library of monoclonal antibodies using said molecule conjugated to a carrier ~~molecule~~; molecule;

(2)——optionally re-screening said ~~library~~; library;

(3)——screening a phage display library with free unconjugated ~~molecule~~; molecule; and

(4)——optionally rescreening said library.

33. (previously presented) A single chain antibody (scAb) from *E. coli* clones G3H5, G3B12, G3G2 or G3H3 deposited as NCIMB-41167, NCIMB-41168, NCIMB-41169 and NCIMB-41170 respectively.